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Calibrating the Human Instrument: Understanding the Interviewing Experience of Novice Qualitative Researchers

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Abstract

Scientific instruments often undergo calibration to ensure that they will produce results that meet or exceed defined criteria within a specified degree of confidence. Such calibration almost always refers to mechanical instruments, those used primarily in the physical sciences. Rarely is the notion of calibration used in relation to the social and human sciences, especially in the context of qualitative research where the human being is the main research instrument. The focus of this study was to explore the experiences of novice human instruments undergoing a process similar to that of calibration. In doing so, we studied how novice qualitative researchers perceived themselves as the research instrument in the process of their first qualitative interviewing experiences. The findings from interviews with four such novices were that their initial calibration gravitated towards one of two states — being "researcher - centered" or "informant - centered ." Their proximity to either of these two states was determined by how they identified with each of four dimensions: (a) where the knowledge of the phenomenon under study lies; (b) what kind of response the researcher received from his/her informants; (c) what kind of information the researcher is looking for; and (d) what kind of information the researcher eventually receives. The middle position on the continuum of states between researcher - centeredness and informant - centeredness is dis cussed in relation to complexity theory

Keywords

Human Instrument, Novice Qualitative Researchers, Interviewing Experience, Theory of Complexity, Malaysia

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Scientific instruments often undergo calibration to ensure that they will produce results that meet or exceed defined criteria within a specified degree of confidence. Such calibration almost always refers to mechanical instruments, those used primarily in the physical sciences. Rarely is the notion of calibration used in relation to the social and human sciences, especially in the context of qualitative research where the human being is the main research instrument. The focus of this study was to explore the experiences of novice human instruments undergoing a process similar to that of calibration. In doing so, we studied how novice qualitative researchers perceived themselves as the research instrument in the process of their first qualitative interviewing experiences. The findings from interviews with four such novices were that their initial calibration gravitated towards one of two states — being "researcher-centered" or "informant-centered." Their proximity to either of these two states was determined by how they identified with each of four dimensions: (a) where the knowledge of the phenomenon under study lies; (b) what kind of response the researcher received from his/her informants; (c) what kind of information the researcher is looking for; and (d) what kind of information the researcher eventually receives. The middle position on the continuum of states between researcher-centeredness and informant-centeredness is discussed in relation to complexity theory.
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Lincoln and Guba (1985) first introduced the concept of the human being as research instrument to stress the uniqueness of the researchers' role in the process of scientific inquiry. This uniqueness lies in the notion that only people construct and bring meaning into the world through their qualities of sensitivity, responsiveness and flexibility, making them the most appropriate instrument for inquiries aiming to arrive at understanding, meaning, the promotion of critical awareness, emancipation, and movement toward deconstruction or decolonization.

The primary point of interest in qualitative inquiry, specifically, is the understanding of a phenomenon of interest from the perspective of those under study. Nevertheless, the researcher, consciously or unconsciously, brings to the research setting his or her own predispositions, assumptions and beliefs, which may align or diverge from those of his or her study participants. This is especially true if the researcher has a strong affinity with the population under study. The topic of subjectivity or propensity for bias as it pertains to the human instrument has been discussed by the scientific community for several decades (and perhaps longer). Some authors (e.g., Peshkin, 1988; Heron & Reason, 1997) argue that "subjectivity" is, in fact, advantageous and "can be seen as virtuous, for it is the basis of researchers making a distinctive contribution, one that results from the unique configuration

of their personal qualities joined to the data they have collected" (Peshkin, 1988, p. 18), which can help the researcher become better equipped to see as others see. Other scholars (Denzin, 1989; Scheurich, 1994; Mehra, 2002) purport that affinity and subjectivity put researchers at a disadvantage by limiting their ability to "accidentally step into" the realm of the phenomenon under study beyond their personal understanding or experiencing of it.

Literature on qualitative research methodologies discusses reflexivity as a technique that researchers may use to address and even guard against bias. Various authors suggest keeping reflective journals (Borg, 2001; Janesick, 1999; Ortlipp, 2008; Watt, 2007) or reflective writing within research (Jasper, 2005) as tools allowing researchers to draw a line between their subjectivity and observable phenomenon. However, there are proportionally less studies that explore the actual experiences of novice researchers undergoing what could be considered as a calibration process, or initial attempts at being reflexive in their research practice. As novice researchers ourselves, we feel it is an interesting question, that is, how the human instrument comes to the realization of one's own subjectivity, predisposition and bias, i.e. the initial experiences of reflexivity. Such calibration is only possible in the process and context of acquiring hands-on research experience, where a researcher faces the challenge of keeping his or her own predispositions and assumptions from interfering into their understanding of the phenomenon under study.

In attempting to better understanding this subject, we felt (our own assumption) that the most appropriate informants of such a study would be novice researchers who might be more prone to be influenced by their own subjectivity, or at least less aware of it, than seasoned researchers. Furthermore, even though all qualitative researchers (ideally) try to make meaning of their research experience regardless of level of experience and proficiency, novices might be especially acute to their initial experiences due to the steep learning curve that occurs at the beginning of the journey. Therefore, exploring their experiences can potentially provide fresh and valuable insights into the process of self-adjustment that takes place within the human instrument.

In light of the above, we posed the following research question to guide our inquiry into the process of calibration among novice researchers: how do novice qualitative researchers perceive themselves as being the research instrument in the process of gaining interviewing experience? Due to several constraints the study was limited to exploring novice researchers' experience in conducting in-depth interviews. Undoubtedly, an exploration of the entire process including data collection and data analysis could yield more valuable insights into the phenomenon in question. However, as novice researchers ourselves, we chose to focus on one major facet of the process before moving on to the other more intricate phases.

Literature Review

In the qualitative research literature many authors have been interested in the exploration of the human being as a primary instrument of scientific inquiry (Glense & Peshkin, 1992; Lincoln & Guba, 1985; Patton, 2002). As highlighted above, Lincoln and Guba were among the first to introduce the term "human instrument." In their seminal work they also laid down the characteristics that "uniquely qualify the human being as the instrument of choice for naturalistic inquiry" (Lincoln & Guba, 1985, p. 193). First, human beings are able to sense subtle cues in the environment to which they naturally know how to respond. While most physical instruments are only able to measure particular factors, the human being is "virtually infinitely adaptable" and "like a smart bomb, the human instrument can locate and strike a target without having been preprogrammed to do so" (Lincoln & Guba, 1985, pp. 193-194). Only people can grasp confusing pieces of data and process them as soon as they are made available. "The human instrument has the unique capability of

summarizing data on the spot and feeding it back to an informant for clarification, correction, and amplification" (Lincoln & Guba, 1985, p. 194). Finally, the human instrument is particularly well-tuned to spot atypical or idiosyncratic responses and explore them in-depth.

Putting forward the notion of a human research instrument subsequently sprouted intense debate around the potential bias such an instrument would inherently create. "Interpretive research begins and ends with the biography and self of the researcher" (Denzin, 1989, p. 12). Furthermore, the researcher's belonging to a particular class, race, gender, religion as well as the researcher's historical position and personal values — all of these can influence, limit and even constrain the process of discovery and generation of knowledge (Scheurich, 1994). Personal interests, beliefs and predispositions are inevitably an integral part of the human instrument.

However, other authors have viewed the researcher's self as a productive part of the research process. The researcher's own life and experiences can be considered as the best instruments for acquiring knowledge about research informants' social and cultural worlds (Lave & Kvale, 1995). Others suggest that subjectivity and drawing on one's inner experiences can be used to get closer to the informants of a given study in order to understand them better (Rennie, 1994; Schneider, 1999).

The subjective-objective "debate" in the research literature is seemingly endless because of the validity of the epistemic positions of both camps. This is often the case when the truth lies somewhere in the middle (i.e., there must be a balance between "omniscient authorial silence" and "omniscient authorial presence"). Of late, several authors have focused on potential practical approaches for capitalizing on the unique position of the human instrument as the active part of reality that one intends to explore. According to Mehra (2002, Deciding What to do Research on - Beginnings of Bias section, para. 2): "We start thinking like a researcher when we begin to question what we know and what we believe." The process of qualitative inquiry thus is composed of two inseparable processes of uncovering and interpreting the experiences and meanings of informants under study while simultaneously trying to understand and interpret the inner self. The use of self-reflection in the process helps to "point to our own subjectivity, acknowledge that it undoubtedly shapes the story we tell, and—most importantly—recognize the fact of the power we wield, the power of interpretation" (Bettie, 2003, p. 22). Two particular studies that were published in this regard have drawn our attention as researchers and served as an inspiration for the topic of this work.

In the first of these studies a researcher explores how working-class students understand, narrate, and make sense of the potential for social mobility through education (Hurst, 2008). However, in the process of her exploration of the research questions the author also addresses the effects of interviewing those similar to one's self, given her unique position as researcher in relation to the informants. Hurst belonged to the same group of working-class students that she studied and therefore also experienced the phenomenon of interest. To make this unique position visible to the reader (as well as to herself), the author amply used self-reflection about her perceived bias by drawing on a beautiful metaphor from classical Western mythology about a young woman called Echo:

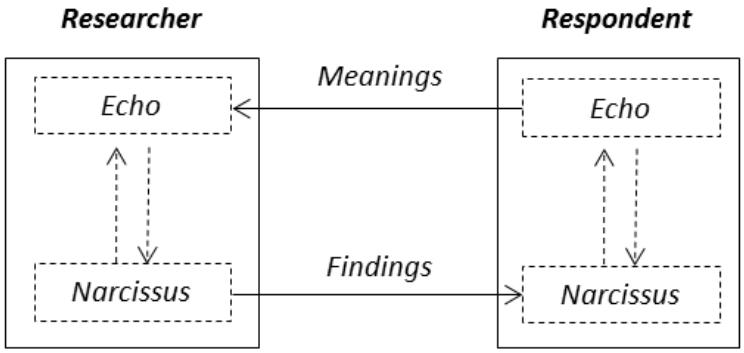
> Let me introduce Echo here. Echo, according to classical Western mythology, was a young woman who was punished for talking too much. Her punishment was never to be able to initiate a conversation, or dialogue, but always to be consigned to repeating what others said before her. She led a tragic life, frustrated by her inability to hold a conversation, particularly with her object of desire, Narcissus… There was a real danger for me in this project that I would be listening for Echo, and that the students I interviewed would respond

> Echo-like to my questions. As a working-class academic myself, I was predisposed to believe that I knew what it was like to be a working-class college student. (Hurst, 2008, p. 339)

In other words, Hurst was afraid that her knowledge— from personal experience —of what it feels like to be in the shoes of her informants, might impede her ability to interpret the unique experiences of her informants. Hurst's Echo is thus the feared bias of the human instrument. She was afraid to become just an Echo to her own feelings, unable to arrive at any new understanding of the phenomenon that she was also experiencing. However, by the end of the study, the author comes to the realization that her lonely Echo met the lonely Echoes of those students whom she was interviewing and, surprisingly, as she concludes: "a roaming Echo... could actually answer in her own words. The spell had been broken" (Hurst, 2008, p. 349). The author was able to do so by conversing with her own Echo in the process of inquiry.

Although not mentioned by Hurst, while reflecting on the Echo-Narcissus metaphor and Hurst's metamorphosis as a researcher, it became evident that she discovered, for herself and for her readers, a dual role played by the researcher—being Echo and Narcissus simultaneously. In so doing, the researcher's role in the process of interaction with her informants must be that of Echo; however, for a qualitative researcher to be aware of one's own bias he or she must not only be Echo but also Narcissus, and an ongoing inner dialog between them. Only then can the spell be broken, paving the way for a novel finding, which is the ultimate goal of any research. This is the only way that the researcher's Echo can answer in her own words. Schematically, this process can be depicted as shown in the following diagram.

Figure 1. The Echo Story in the Research Process



For a qualitative researcher who has a special affinity with his or her informants, such as being a member of the same population under study, it is usually more obvious where he or she stands as Echo. However, Narcissus' appearance is always more ephemeral and becomes visible only in the process of inner dialog or self-reflection. How is it possible to make self-reflection visible and a productive part of the research process? Another author whose work attracted our attention discussed this very question. In her work, Ortlipp (2008) discusses how the use of reflective journals can have concrete effects on the research design. The process "of gradually altering methodologies and reshaping analysis" (p. 696) as well as the transformation of the researcher as instrument, is made visible through the use of reflective journals. Ortlipp illustrates her point by drawing on her own experiences in keeping reflective journals while doing research. According to the author, her reflective journal became a place where she could question herself as a researcher regarding the methods, frameworks, and assumptions used throughout the research process. Therefore, journaling

became an important part of the method itself. The author described how she could change the design of the ongoing research on the basis of analysis of her self-reflection. Thus, self-reflective journaling helped her to make her thoughts, experiences and feelings a visible part of the research for herself and the reader. The use of reflective journals facilitates the Echo-Narcissus conversation that takes place within the researcher's inner self; a conversation that always takes place whether a researcher is conscious of it or not.

Researcher's Position to the Study[1]

Reading Ortlipp's article became an "a-ha" moment for me. It dawned on me that being enrolled in a qualitative research class and undergoing the experience of conducting my first qualitative research project provided a unique opportunity to explore the process of self-reflection. Initially, I thought of suggesting that my classmates also keep reflective journals while doing their studies for the sake of the group, in order to compare and contrast their experiences. Through looking at multiple perspectives on the same experience we could have potentially gained more valuable insight than by limiting our analysis to our own individual reflections. Due to various constraints, however, I decided to narrow the scope of the current study to the data collection stage and to explore how my colleagues reflected on themselves as the human instrument while undergoing their first interviewing experiences.

Much of the literature pertaining to the experiences of qualitative researchers in general, and on interviewing experiences in particular, comprises either practical tips (Cisneros-Puebla et al, 2004; Heatly, 2005; Knapik, 2006; Knox & Burkard, 2009; Turner, 2010) or confessions by experienced researchers (Brearley, 2005; Watt 2007; Stewart, 2010). As stressed by Tanggaard (2004), however, in her own reflective work on becoming a qualitative interviewer, "it (the current literature) is only the confessions of well-known authors that reach the publishing state, because there must be something of note to situate the confessions. While the novice researcher may have a lot to confess, his confession rarely finds an audience" (p. 14).

The present study thus aimed to add to the body of knowledge on the experiences of novice qualitative interviewers, with a particular focus on the researchers' reflections on their role as primary research instrument in the process of conducting in-depth one-on-one interviews.

Methods

While devising the research design, in accordance with Ortlipp's advice regarding the usefulness of keeping a reflective journal, I decided to do so in order to make the process of conversation with my Echo visible to the reader and myself as a strategy for enhancing reflexivity.

Research Design

Typically, a research design is by the content and nature of the specific research question(s) being posed (Hesse-Biber & Leavy, 2006). The research question that guided this study was how do novice qualitative researchers perceive themselves as the research instrument in the process of gaining interviewing experience? Inquiry into meaning attributed to a particular phenomenon by those experiencing it calls for a qualitative research design

[1] Although this article has two authors, the experiences discussed in subsequent sections are written from the perspective of the first author only, who experienced the subject matter first-hand.

(Krauss, 2005). Furthermore, in this study the human instrument itself was the primary tool to study other human instruments.

The Setting

The context of the study was a 12-week course, "Qualitative and Case Research Methodologies" taught to Doctor of Business Administration students as a part of the program. Twenty students were enrolled in this course, including the first author of this paper. The course instructor (second author of the paper) is an international and taught the course on a part-time basis. The students were majority Malaysian with a few international students from Palestine, Russia and Pakistan. The majority of the students enrolled in the course were male and most were studying on a part-time basis. The course was offered one day per week on the weekend to facilitate part-time students who work full-time.

The course intended to equip students with qualitative research knowledge and techniques through both theoretical and hands-on modes material. During the course, each student was assigned to conduct a class research mini-project in order to acquire hands-on experience conducting qualitative research. As a tool of data collection, students were required to conduct in-depth interviews, in addition to being allowed to employ other data collection methods as well. This setting provided a rich context for examining how beginning qualitative researchers construct meaning in their role as research instrument.

Sampling

The final sample under study was comprised of four novice qualitative researchers selected from the same qualitative research class, who were also assigned to conduct a mini research project with no prior experience. At the beginning, only three novices were selected due to time and location constraints, particularly for those students who lived on campus and were more easily accessible. The criterion of accessibility was of considerable importance. Initially, I planned for the study to revolve around a somewhat different research question as I was originally interested in not merely discovering how novice researchers perceive being the primary tool of scientific inquiry, but how their perceptions evolve in the process of gaining experience. Therefore, I planned to conduct two interviews with each student over the course of their respective projects. However, I came to realize that time constraints were more stringent than I initially thought, and even my small sample of three became difficult to access. I subsequently decided to limit the analysis to an initial interview for each informant in the study.

In addition to the three initial students, one more was selected on the basis of his unique ability to use self-reflection and rich description in his discussion of the topic[2]. My own intuition as a human instrument kept telling me that I would miss out on a lot of rich data if I did not include this person in my sample even though he[3] was less accessible than the others. Therefore, four students in total were selected as informants. Formal consent was obtained from all four and all readily agreed to participate.

My choice of sampling also initially included a desire to interview the informants immediately after they conducted their own interviews to make it easier for them to reflect on their experiences. However, after transcribing my first interview I realized that I was better able to reflect on my experience after doing the transcription. I found that transcribing

[2] This is important to note as the university under study is comprised of an international student body from many different countries, all of whom were interviewed in English.

[3] Because there was only one female informant, to help preserve anonymity, all participants are referred to as "he."

allowed me to "re-live" the experience – somewhat surprisingly -- on a higher emotional level (Mero-Jaffe, 2011) by awakening me to certain nuances and subtleties, mostly negative in this case, related to my interviewing style and questioning. As I wrote in my reflective journal:

> I think I should not interview my informants immediately after their interviews. Let them transcribe first. Let them live through their experience again like me... While doing the process of transcription, the reality was unfolding in front of my eyes once again, but this time only as an observer—even though I saw my mistakes I could not do anything about them and this caused a higher emotional response inside of me... (Research Journal, record from June 29, 2011)

As a novice qualitative researcher studying those similar to myself, the affinity I had with my informants helped me to identify possible deficiencies in my research design. At the same time, my reflective journal, as in Ortlipp's case, became the place where I questioned myself as a researcher and molded my approach as the study evolved. In this way the reflective journal became an important part of the research methodology. I thus decided and informed my informants that I would interview them after they transcribed their first interview.

Data Collection

The research question determines what we consider "data" in the study, which consequently determines the most appropriate techniques to employ. Since my primary focus was on what goes on inside the human instrument, the appropriate tools of data collection were interviews and documents related to the experiences of the researcher. The interviews were person-to-person and semi-structured. The decision to conduct only person-to-person interviews was again backed by the objective of the research to study the inner self of the human instrument. The nature of the guiding research question suggested a somewhat higher degree of flexibility in the process of interviewing; nevertheless, I opted for a semi-structured approach, as I was not sure if I was sensitive enough to manage a lot of flexibility at such an early stage. Interviews were tape-recorded with the consent of the informants and consequently transcribed verbatim, as this technique provides "the best database for analysis especially for a novice researcher" (Merriam, 2009, p. 110).

Data Analysis

Interviews with all four informants were tape-recorded and transcribed verbatim. I tried to transcribe data on the same day or the day following the interview, so that I could read through and get a general sense of it before my next interview. This allowed me to be alert to similarities or differences between the informants' responses.

For each informant I used content analysis and analytic induction to narrow the data to themes as described by Merriam (2009, p. 175). She primarily draws her approach from the constant comparative method used in grounded theory (Glaser & Strauss, 1967). As Merriam points out, this method is inductive, comparative and widely used across the broader field qualitative research without necessarily resulting in new theory. After conducting my interviews and transcribing, I immediately analyzed each interview line-by-line to develop an initial set of codes. For convenience I wrote my codes on small pieces of paper and placed them on a white board that I referred to constantly throughout the study. This allowed me to see and think about the data continuously, and facilitated the process of transforming my

codes into higher conceptual categories. Timely transcription of data allowed me to notice emerging differences and similarities across my four informants early on, as described in the following section.

Findings and Discussion

While collecting and analyzing the data I kept the main research question at the back of my mind: how do novice qualitative researchers perceive themselves as the research instrument in the process of gaining interviewing experience? In reporting I refer to my informants through pseudonyms in order to protect their identities.

What constitutes the main finding of the study was the discovery of two very different ways of seeing oneself as a human instrument. I first noticed this while interviewing with my second informant. Since initially I planned to have two interviews with each informant, by the time I was interviewing my second informant I had already conducted and transcribed two interviews with the first informant. With the data from the first two interviews in mind I began to see a striking difference between the first and second informants. The interviews with the third and fourth informants reaffirmed this emerging finding. I then went back and started to consider my first informant as a type of "outlier" which I later realized represented a type of experience that went beyond my initial dichotomy due to the informant's interpretation of his experience being so different than the others.

My first informant's experience differed from the rest of the group on four dimensions:

1) Where the knowledge of the phenomenon under study lies
2) What kind of response the researcher received from his/her informants
3) What kind of information the researcher is looking for
4) What kind of information the researcher eventually receives

Because of apparent differences between my informants on these four dimensions I was able to identify the emergence of two distinctive types of novice human instruments, which I called "researcher-centered human instrument" and "informant-centered human instrument." The differences between them are summarized in the following table.

Table 1: Two Different Ways of Seeing Oneself as a Human Instrument

DIMENSION	RESEARCHER-CENTERED	INFORMANT-CENTERED
1. Where the knowledge of the phenomenon under study lies	I know the topic better while my informants are lacking some knowledge	As a researcher I cannot know it better than my informants. It is the informant who knows his/her reality better. The reality is within the informant—in his or her experience
2. What kind of response the researcher is receiving from informants	Informants cannot handle questions, cannot give me full information, they seems to feel confused and perplexed	Informants are sharing a lot—beyond what I have asked. This makes them happy.
3. What kind of information the researcher is looking for	I know what to expect	Expect the unexpected, expect anything to come

4. What kind of information the researcher eventually receives	I received what I expected	I received something that I did not expect

The first type of novice researcher, the researcher-centered instrument, represented by first informant, Samad, assumed to know the answer to his research question and showed little openness to discovering anything new. This type of novice allowed his pre-existing knowledge and experience to dictate his inquiry. His lack of awareness of both himself and the goals of the qualitative interviewing process itself also led him to try and "prove" or support his pre-existing assertions by posing questions in a manner designed to "test" his informants. This type of human instrument, as researcher-centered, is more or less deductive in his approach. Regarding the notion of where knowledge of the phenomenon under study lies, Samad shared the following:

> This one seems to me to be a bit higher in their understanding. They might not have studied this. However, I have studied this, this is my subject. So I know. If I, you know, put my expectation very high that they know everything about [***] like me, I know. Ok, I am not saying that I know everything, but still I know better than them, because this is my subject, I have worked on it. (Samad)

The second type, the informant-centered instrument, represented by three other informants, Badrul, Naim, and Raif, approached their studies with more of an open mind, motivated by the desire for discovery of what they did not already know. They showed a much greater awareness of their own biases and engaged their informants with the assumption that the answer to the research questions lied with them, rather than with themselves. They saw their informants as experts, regardless of whatever pre-existing knowledge they may have believed themselves to have on the topic under study. For instance, Badrul and Naim said:

> I guess maybe my interviewee knows more about this. So, I actually was kind of probing what kind of questions I should ask. I started from general questions but then our interview deviated a little bit from the research question. So I tried to move it back. And in this situation, I think, I can hear from my recording that it was not so firm and straight like a real interviewer. Maybe he was replying better than I was asking (Naim).

> Really different people have different thoughts, different beliefs, different ideas, and experiences. Maybe in the literature, related to your research question, there are many experiences already being reflected on, which might give you an idea about what the answer should be. However, people with different experiences have a lot to share—a lot of different results or different answers. (Badrul)

Naim, who was very concerned with posing his research question directly, seemed to have done so out of fear of contaminating the results with his own predispositions, while also realizing that his informant's experience of the phenomenon was richer than his own. Badrul alluded to a similar experience; in his view, notwithstanding the fact that the central research

theme might have been explored previously, every informant's unique experience can bring new insight to the topic.

Regarding the kind of data that my informants received from their own informants, Samad stumbled over the problem that his questions were not allowing his interviewees to share their experiences freely. Instead, the people he interviewed seemed to be puzzled and did not know how to respond to him:

> At one point I was thinking that she is not explaining the last question well. Because you know, either she had no clue or she had no idea how to express or how to answer it. Because my topic was [***] so I think either she had not studied [***] before or she never thought of [***]. So, that question—the last question—[***], she was a bit, you know, reluctant or she could not express herself well. She had, you know, a number of thoughts in her mind. (Samad)

Here, the question referred to by Samad may have been too advanced for his informants as it was formulated on the premise that the researcher knows the phenomenon better than those being studied. Samad's approach, therefore, appeared to focus on the topic itself, rather than on how his informants perceived or experienced the topic. This often leads researchers into the trap of trying to "test" their informants' level of knowledge, an indication that the researcher is engaged in a more deductive approach. Either he was not aware or could not bring himself to accept that the goal of his study was to understand the topic from the perspective of his informants, rather than trying to test their responses against some perceived objective or authoritative point of view. In contrast, Badrul, Naim and Raif, in different ways, felt that their informants shared more than what they were asked and indicated that they were more than happy to do so. For example, Badrul shared:

> I would say, certainly, I was the instrument who kind of started the discussion, triggered the discussion, created the focus, and allowed this person to engage with this topic. That's the role that I played. So this particular informant was highly motivated towards the end. You could see a high level of motivation and also from facial expression -- happiness. (Badrul)

There was also a difference in what the two types of novice researchers were expecting from their informants. Samad had a predetermined set of answers that he expected to receive from his informants:

> He was answering the required thing that I was looking for, or what I was expecting, because I know my subject so I was expecting: ok, if somebody asks me about this thing I will reply in this manner or I will give this kind of information. So I was expecting him to say this, this, this. So he said that! Yep! (Samad)

In contrast, three other novices, Badrul, Naim, and Raif, genuinely did not know what to expect. Badrul put it best:

> Expect any result to come! It is not that you plan what might be the results and those are the only results that you will get. Because the informants are sharing their experience, their life experience. So this will be worth something. So you have to appreciate and expect a-n-y-t-h-i-n-g! (Badrul)

Finally, there were differences regarding the kind of data my informants received from their informants. Samad played an active role in getting his informants to provide him with data that confirmed what he already felt he knew, while the rest expressed that their data was highly unexpected. Samad said:

> She did not know how to answer. I tried to calm her down, relax her, and give her certain clues.... So from there she picked up certain points and gave me what I wanted, what I was looking for (Samad).

Three other informants, in contrast, commented on certain moments during his interviews that were especially fruitful and unexpected. For example, Badrul highlighted certain moments or responses during his interviews that resulted in more than what was anticipated:

> I expected the answers to be either on the positive or negative side but getting this… this is something extra. Even for me as a researcher I did not expect to get something related to [***] or something extra... I did not expect this at all (Badrul).

After completing the initial data collection and analysis, my initial finding, as previously mentioned, was that my first informant was a sort of outlier whose experience "deviated" from the rest of the group. I was settled on this result until an incident took place one day while in the company of my fellow classmates. We were sharing our research experiences when someone made the remark: "I realized that my questions were longer than the answers of my informants." Immediately, I realized that my conclusion about my first informant being an outlier was most probably due to the limitation of my sample, and most probably there are many more novice human instruments like him out there. The inductive-deductive dichotomy I uncovered actually reflects a continuum of states that ranges from "researcher-centeredness" to "informant-centeredness." This conceptualization of a continuum of states differed substantially to my initial assumption of the two representing a typology or classification, with each "type" having a more or less fixed set of characteristics.

A second important incident further validated what I understood to be the informant-centered human instrument. When I asked the second informant to complete the sentence, "From this experience I have realized that as a primary instrument of research I..." he said, "I think it is both! Both interviewer and interviewee because I look at myself as a novice interviewer and I understand that sometimes we interview people who are more knowledgeable than the interviewer himself." It was only later while closely analyzing the data that I discovered that my third and fourth informants, Raif and Badrul, were trying to convey a similar message. Raif said, "Although he contributed most of the points, by the end I felt that my role was also in the giving mode. It was not just him giving; it was unique, but I really felt that way."

This informant felt that during the interview both he and the interviewee were "giving;" the informant was giving in the form of his view of reality and my informant was contributing by asking questions that he called "triggers," which stimulated his informant to provide richer and richer data. My last informant, Badrul, had a similar experience:

> Sometimes the interviewee is sharing something and because you are the researcher—you have only two eyes, you cannot cover all aspects of their problem or issue. However, contributing more opinion, making them feel that they are not the interviewee but they are just like a business partner, you are giving and taking—both sides, sharing. (Badrul)

This group of informants was trying to describe the same experience, albeit using different language. To them, the researcher and the informant constitute the human instrument together. As illustrated by the continuum, mentioned previously, my informants, with the exception of Samad, intuitively gravitated towards a state of "informant-centeredness." However, Samad took more of a positivistic stance in dealing with his informants, which led him to be more deductive in his approach. Essentially, he ended up trying to test the hypotheses that he had drawn from his many years of experience and knowledge of the research topic.

This last notion of openness resembles the concept of "closed" and "open" systems. In physics, a closed system is a system that has no interaction or communication with any other system—no energy, matter, or information flowing into or out of it. Such a system eventually comes to rest—equilibrium. The open system, on the other hand, is a state where energy and matter continuously flow in and out of it. Closed systems always have a predictable end state. Open systems are much more complicated.

For the last three decades one sub-class of the open system has drawn special attention by social scientists—complex adaptive systems. There have been attempts to explain the behavior of organizations and individuals through equating them with complex adaptive systems (Anderson, 1999). Particularly, many authors were interested in exploring how the representation of an organization as a complex adaptive system can explain such organizational processes as continuous change (Brown & Eisenhardt, 1997; Axelrod & Cohen, 1999) and innovativeness (Carlisle & McMillan, 2006). It is a known fact that one of the most important characteristics of a complex adaptive system is its ability to achieve the most productive state while operating "at the edge of chaos" or in a so-called "zone of emerging complexity" (Carlisle & McMillan, 2006). Only in this state is the system able to demonstrate innovation and creativity leading to new possibilities. Furthermore, the system only approaches the zone of emerging complexity when the number of interactions and randomness of connections between its elements is increasing.

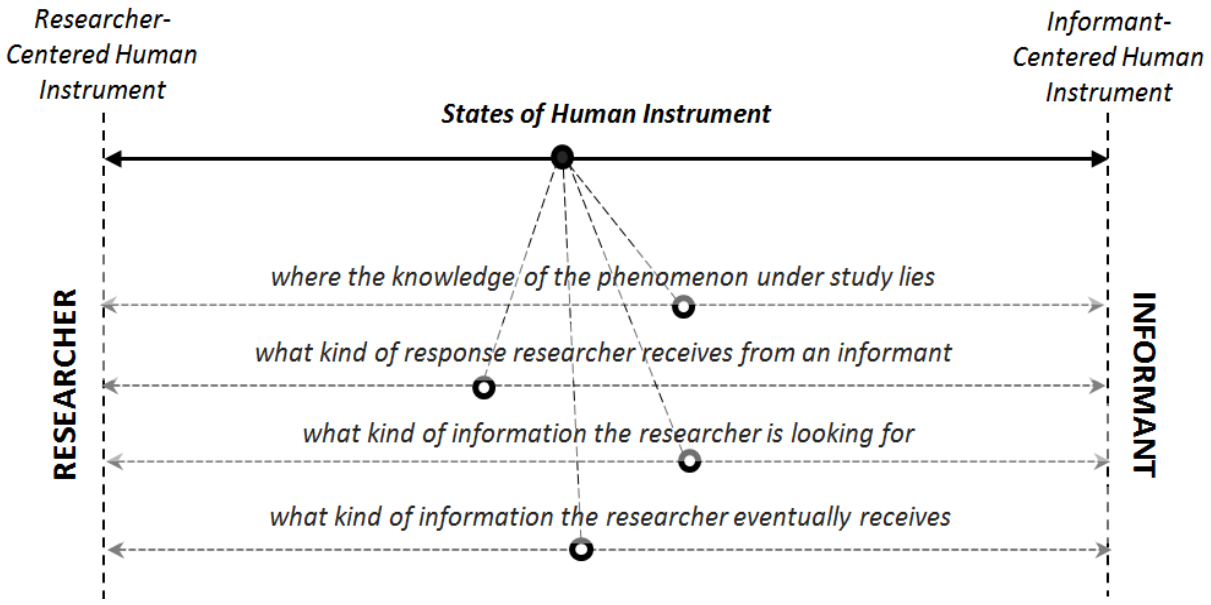
The findings from this study relate the concept of the human instrument, as discussed in the qualitative research literature, with complex adaptive systems and their unique ability to innovate in the zone of emerging complexity. Indeed, the human instrument can be viewed as a type of complex adaptive system. On a higher level it can be seen as consisting of at least two elements — the researcher and the informant. However, if we consider all the meanings and personal experiences that belong to both researcher and informant, then the number of elements in the system increases, along with its complexity. If, however, a researcher preoccupied with his or her own predispositions regarding the research question shuts himself off from the informant's experience, this reduces the number of interactions in the system, thus reducing the potential for greater creativity and dynamism.

Among my informants, three gravitated towards a state of informant-centeredness. They were genuinely engaged with the process of exploring reality together with their informants and were open to the unexpected. They allowed their personal experiences and understanding of the phenomenon under study interact with those of their informants, thus allowing for greater complexity and richness in terms of findings. This complexity may bring perceived disorder and chaos, as emphasized by Carlisle and McMillan (2006); however, the unique ability to make sense of such phenomena and bring a sense of order to them belongs to the human being alone. Therefore, the human instrument as a form of unity between researcher and informant effectively operates as a complex adaptive system, thus resulting in new patterns of innovation and creativity.

Conclusion

The aim of this paper was to explore how novice qualitative researchers perceive themselves as the primary research instrument in the process of gaining interviewing experience. The main finding was the discovery of two distinctive ways of how novice qualitative interviewers experience being a human instrument. The findings have expanded our understanding of the concept of human instrument as it has been previously discussed in the literature by attempting to understand how novice researchers understand what it means to be a human instrument, how they carry out data collection as such, and how it impacts on the subsequent phases of the research process. In addition, the findings shed light on what causes novice researchers to be at different points along the continuum of researcher-centeredness and informant-centeredness, that being their degree of openness towards their informants along four dimensions: (a) where the knowledge of the phenomenon under study lies; (b) what kind of response the researcher receives from his informants; (c) what kind of information the researcher is looking for; (d) and what kind of information the researcher eventually receives. Schematically, this process is shown in the diagram below.

Figure 2. Continuum of Human Instrument States



The continuum of states between the two extremes is represented by the upper horizontal axis in Figure 2. The position that a qualitative researcher takes on this axis is jointly determined by his or her position on each of the four lower axes, which also represent continuums between two extremes—researcher and informant. The position on each of these four axes represents the degree of the researcher's openness towards his or her informants, and the data that results from their interaction. This diagram can act as practical guide for novice interviewers, as well as a reminder for experienced qualitative researchers, pointing to the necessity of maintaining openness with informants and being aware of pre-existing biases and assumptions resulting from previous experience and knowledge. While conducting their interviews, qualitative researchers should continuously check where they are on the above four axes and whether they are "skewed" to either of the two states.

As a novice researcher, undergoing this process and then reflecting on it still makes me wonder what drives and nourishes openness in the first place. The following quote by Merriam (2009, p. 58) stands out in my memory: "A crucial factor in deciding what topic you

would like to research is to be genuinely curious and interested in finding the answers to your questions. This interest, even passion, will carry you through the process more than any other single factor." Many times this genuine interest starts from the affinity of the researcher with those under study. This was the case for Hurst (2008), who studied those similar to her. Ironically, the main research question in this paper was illuminated by Hurst's use of the "Echo-Narcissus" story. In a way, I feel that I too found "Narcissus" and "Echoes" among my own informants. Samad was effectively playing the role of Narcissus, while the others who were genuinely open to the stories and experiences of their informants, discovering reality together with them, each played the role of Echo.

As a novice qualitative interviewer, I also feel that I found my Echo in the process. Is this "genuine interest" what makes the researcher a "smart-bomb," able to hit the target without being pre-programmed to do so? Perhaps due to my own affinity with my informants and genuine interest in the research topic I too was able to experience this phenomenon. Finding my Echo was reflected in my journal at the moment I hit the target:

> The interview is a crucial moment in the research process. It is the moment when you are so close to the subject of study—you are so close to the reality that you are trying to understand. How sensitive you are as an instrument determines how close you can get to that reality. You get what you ask, and you subsequently analyze what you got! So this moment of experiencing the phenomenon is ultimately important. In order to experience that reality, as an instrument, I felt that I literally must use my five senses and something beyond -- my imagination... and marvel at this moment of experiencing the phenomenon so close, really becoming one human instrument for two—the researcher and the informant—and discovering reality together through self-navigation; like a "smart bomb." No other instrument has been given this unique opportunity, but I do and you do as human instruments. (Research Journal, record from July 12, 2011)

Further research on the topic might be considered in at least three directions.

First, it would be beneficial to explore the experiences of novices during the entire research process rather than merely exploring their interviewing experiences. This study was delimited to interviewing experiences due to time constraints. However, exploring other stages of the process might yield new insights on the experience of being a human research instrument as well as additional factors that might influence one's place along the above-mentioned continuum.

Secondly, it might also be beneficial to explore the dynamics of how the perception of novices regarding the process of being a human instrument changes over time. Certainly the position of a novice on the entire continuum of the states will change as he or she gains practical experience. This process of change that human instrument goes through while gaining practical experience is an intriguing topic for inquiry. What are the stages of this process? What are the factors that might influence novices to move along the continuum between researcher-centeredness and informant-centeredness?

Furthermore, should the sample size increase, more "states" might be discovered along the continuum. Likewise when being confronted with other novice qualitative researchers outside of my sample I realized that Samad is not an outlier but rather representative of another group on the continuum of states. How many more ways of experiencing the reality I might be missing due to my sample size?

Lastly, understanding the experiences of novice researchers in the way put forth in this paper can inform pedagogical practices and teaching of qualitative research by making instructors aware of the challenges that novices face, and, if necessary, help students make better sense of their own experiences. Helping students make sense of their own experiences during data collection is an important aspect of developing a reflexive mindset and culture that is critical in conducting high-quality qualitative research. Too often, instructors and supervisors of qualitative research students might find it challenging and lack awareness of where their students stand on the reflexivity continuum. This article aims at addressing this need by explaining why reflexivity in the context of data collection is important, how it can be incorporated into project-based coursework, and/or how it can be used in the context of individual supervision of post-graduate theses.

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